

### **AMENDMENTS TO THE SPECIFICATION**

Please replace Paragraphs [0112] through [0115] with the following paragraphs rewritten in amendment format:

[0112]

[Twelfth Embodiment]

The optical transmission system of a twelfth embodiment of the present invention is explained. The configuration of the optical transmission system of the twelfth embodiment of the present invention is shown in Fig. 15. The optical transmission system of this embodiment differs from the optical transmission system of the first embodiment in that the balanced detection circuit 221 consists of an equalizing amplification circuit, which is equivalent to the balanced photodetector 202 and amplifier 203, and in that the infinitesimal-modulated signal component detection circuit 222 consists of a data regeneration circuit 204, which discriminates and regenerates data from the output of the ~~equivalent~~ equalizing amplification circuit, a current consumption monitoring circuit 251, which monitors the current consumption of the ~~equivalent~~ equalizing amplification circuit constituting the balanced detection circuit 221, and the band-pass filter 232 shown in Fig. 13.

[0113]

An ~~equivalent~~ equalizing amplification circuit generally consists of a transimpedance amplifier (TIA) 252 and a limiting amplifier (LIM) 253. The current consumption monitoring

circuit 251 consists of a resistor 254 inserted between the power supply terminal of the limiting amplifier 253 and the power supply, and an amplifier 255 which amplifies and outputs the voltage at this power supply terminal. Otherwise, the configuration is the same as that of the optical transmission system shown in Fig. 13, and so the same symbols are assigned to the same components, and redundant explanations are omitted.

[0114]

When the carrier frequency of the signal light shifts from the peak or bottom of the optical frequency characteristic of the Mach-Zehnder interferometer 200, the amplitude of the main signal input to the ~~equivalent~~ equalizing amplification circuit is reduced. The transistor amplification circuit constituting the ~~equivalent~~ equalizing amplification circuit is generally such that the current value flowing in the transistor is asymmetric when the input signal voltage (current) deviates in the positive direction and in the negative direction; hence the current consumption differs depending on the amplitude of the input signal to the transistor amplification circuit.

[0115]

Hence the current consumption monitoring circuit 251 is used to monitor current consumption in the ~~equivalent~~ equalizing amplification circuit, and by extracting the infinitesimal-modulated signal component (f1) using the band-pass filter 232, the amplitude and phase of the infinitesimal-modulated signal component superposed on the optical

signal passed by the Mach-Zehnder interferometer 200 can be detected. By synchronous detection of this signal using the synchronous detection circuit 223 the error signal component can be extracted, and by feeding back this error signal component, it is possible to lock on the desired state.